

Appln. No. 10/607,077
Response dated March 6, 2006
Response to Election/Restriction Requirement of February 6, 2006

Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in this application.

Listing of Claims

Claims 1-44 (cancelled).

Claim 45 (previously presented). A method of identifying environmental parameters of interest by identifying the presence and abundance of a nucleic acid marker sequence comprising the steps of:

- a. providing a soil sample containing a population of interest;
- b. isolating genomic DNA from the soil sample;
- c. performing a diagnostic PCR-based assay utilizing a plurality of species-specific probes to the nucleic acid marker sequence that shows a correlation to the parameter of interest; and
- d. inferring the presence of the parameter of interest based upon the presence of the nucleic acid marker sequence.

Claim 46 (previously presented). A method of identifying environmental parameters of interest by identifying the presence and abundance of a nucleic acid marker sequence comprising the steps of:

- a. providing a soil sample containing a population of interest;
- b. isolating genomic DNA from the soil sample;
- c. performing a hybridization-based assay utilizing a species-specific probe to the nucleic acid marker sequence that shows a correlation to the parameter of interest; and
- d. inferring the presence of the parameter of interest based upon the presence of the nucleic acid marker sequence.

Claim 47 (currently amended). ~~A~~The method according to claim 145 or claim 246, wherein the nucleic acid marker shows a perfect correlation to the parameter of interest.

Claim 48 (currently amended). ~~A~~The method according to claim 145 or claim 246, wherein the nucleic acid marker shows a high degree of correlation to the parameter of interest.

Claim 49 (currently amended). ~~A~~The method according to claim 145 or claim 246, wherein the nucleic acid marker shows a moderate degree of correlation to the parameter of interest.

Claim 50 (currently amended). ~~A~~The method according to claim 145 or claim 246, wherein the environmental parameter of interest is a subsurface oil or natural gas deposit.

Claim 51 (currently amended). ~~A~~The method according to claim 145 or claim 246, wherein the environmental parameter of interest is a dynamic change that occurs during an oil and gas deposit's development that affect its hydrocarbon composition, migration, depletion, and hydrogen sulfide production.

Claim 52 (currently amended). ~~A~~The method according to claim 145 or claim 246, wherein the environmental parameter of interest is a mineral deposit.

Claim 53 (currently amended). ~~A~~The method according to claim 145 or claim 246, wherein the environmental parameter of interest is an indicator of the mineral deposit's composition.

Claim 54 (currently amended). ~~A~~The method according to claim 145 or claim 246, wherein the environmental parameter of interest is an agricultural pest.

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Claim 55 (currently amended). AThe method according to claim 145 or claim 246,
wherein the environmental parameter of interest is an industrial organic chemical.

Claim 56 (currently amended). AThe method according to claim 145 or claim 246,
wherein the environmental parameter of interest is water.